miles and its brightness falls off from 14 per cent of its brightness when at its near approach to the Earth in November, 1911, to only 6 per cent. Its "stellar brightness" at the end of April is 1.6; that is, it is rather nearer a second-magnitude than a first-magnitude star.

Jupiter on March 31st rises at about half-after one in the morning and on April 30th at about half-after nine in the evening. It is in *Scorpio* and moves eastward about 2° during March. In April it moves about the same amount westward.

Saturn is in the western sky in the evening, setting at about 11 P. M. on March 1st and about 7:30 on April 30th. During the two months it moves about 7° eastward and 2° northward from *Aries* into *Taurus*.

Uranus is a morning object, rising at about 5 A. M. on March 1st and at about 1 A. M. on April 30th. It is in *Capricorn* and moves about 2° eastward during the two months.

Neptune is above the horizon throughout most of the night on March 1st, not setting until about 4 A. M. On April 30th it sets at about midnight. It is in *Gemini* south of *Castor* and *Pollux*.

PLANETARY PHENOMENA FOR MAY AND JUNE, 1912.

By Malcolm McNeill.

PHASES OF THE MOON, PACIFIC TIME.

Last Quarter	May 9,	1h 56m	A.M.	June 7,	6h 36m P.M.
New Moon	" 16,	2 14	P.M.	" 14,	10 24 P.M.
First Quarter	" 23,	6 11	A.M.	" 21,	12 39 P.M.
Full Moon	" 30,	3 30	P.M.	" 29,	5 34 A.M.

The first magnitude star *Antares, α Scorpii,* will again be occulted by the Moon on the evening of June 26th. For the eastern part of the United States the occultation will begin not far from 11 P. M. and will last an hour or more. It will take place earlier for observers farther west.

The Sun reaches the summer solstice, its farthest distance north of the equator, on June 21st, 11 A. M. Pacific time.

Mercury is a morning star on May 1st, but on that date it rises only three quarters of an hour before the Sun and is therefore too near that body for naked-eye view. It reaches greatest west elongation on the morning of May 13th, rising only a little less than an hour before sunrise, hardly at sufficient distance for naked-eye view, unless under exceptionally good weather conditions. The apparent distance from the Sun is 26°, which is rather more than the average greatest elongation, but the planet is 11° south of the Sun, and not far from its greatest heliocentric latitude; that is, it is in that part of its orbit which is farthest below the plane of the Earth's orbit. After passing greatest west elongation it moves toward the Sun and reaches superior conjunction, becoming an evening star on June 17th. At the end of June it sets rather more than an hour after sunset and may be seen in the evening twilight under favorable weather conditions. It is in conjunction with *Saturn* on June 2d and with *Venus* on June 11th, in each case *Mercury* passing about the Moon's diameter north of the other planet.

Venus remains a morning star until after the end of June, but is too near the Sun for easy observation throughout the entire period, the interval between the rising of the planet and that of the Sun being less than forty minutes on May 1st and only eight minutes on June 30th. At the end of June it has nearly reached superior conjunction with the Sun and its maximum distance from the Earth. It is in conjunction with *Saturn* on May 27th. Its conjunction with *Mercury* on June 11th has already been mentioned.

Mars remains in the western sky in the evening, but is nearer the Sun than it was during the last two months' period. On May 1st it sets just before midnight and at a little before 10 o'clock on June 30th. During May and June it moves about 37° eastward and 8° southward from *Gemini* into *Cancer*. During May it moves a few degrees along a line south of *Castor* and *Pollux*, α and β *Geminorum*. Its brightness will be intermediate between that of the two stars, and it may easily be distinguished by its ruddy color. Its distance from the Earth increases from 171 millions of miles on May 1st to 212 millions at the end of June, and at that date its brightness

is only one twenty-fifth of that which it had when nearest the Earth in November. It reaches its aphelion on June 8th, but its distance from the Earth will continue to increase for some months.

Jupiter comes to opposition with the Sun on the morning of June 1st and will then be above the horizon during the entire night. During the two months' period it retrogrades—that is, moves westward—about 7° in *Scorpio* a few degrees north of *Antares,* the principal star in the constellation. Its distance from the Earth at the time of opposition is smaller than at other times, and its brightness is considerably greater than it is near conjunction, being nearly twice as great as it was at the beginning of the year. This variation in brightness is not nearly as great as it in the case of *Mars* or *Venus,* but it is enough to be noticeable.

Saturn is an evening star at the beginning of the period, but comes to conjunction with the Sun and becomes a morning star on May 14th. It remains too near the Sun for naked-eye observations until after June 1st, and by the end of the month it rises more than two hours before sunrise. It moves about 7° eastward in the constellation *Taurus,* a little south of the *Pleiades* cluster. Its conjunctions with *Mercury* and *Venus* have already been noted. The rings as seen from the Earth are well out toward their maximum opening, the apparent minor axis being a little more than 40 per cent of the major axis. The position of the rings makes a perceptible effect in the brightness of the planet.

Uranus rises at about 1 A. M. on May 1st and at about 9 P. M. on June 30th. It moves westward about one degree in *Capricorn.* No bright stars are in this region and identification of the planet is not easy, although it is in range of naked-eye visibility on a clear moonless night.

Neptune is in the western sky in the evening, setting about midnight on May 1st and shortly after 8 P. M. on June 30th. It requires a telescope of some power to show it. It moves about 2° westward in *Gemini.* It is in conjunction with *Mars* on May 12th and with *Mercury* on June 30th.

(SEVENTY-FOURTH) AWARD OF THE DONOHOE COMET-MEDAL.

The Comet-Medal of the Astronomical Society of the Pacific has been awarded to Monsieur A. SCHAUMASSE, of Nice, France, for the discovery of an unexpected comet on November 30, 1911. Committee on the Comet-Medal:

W. W. CAMPBELL,
S. D. TOWNLEY,
H. D. CURTIS.

SAN FRANCISCO, March 19, 1910.